Claims

1. Method for measuring current in a motor controller (1) employing switching of power semiconductors, the current being sensed by a current sensing device placed on a motor phase and generating an output signal characterized in that the output signal (i_{w1}, i_{v1}) is transmitted to a receiving unit (22,14), and then sampled with an oversampling frequency (f_s) during a switching period of the power semiconductors (T1-T6), said samples being digitally filtered for maintaining symmetry of the samples with respect to a centre line of the switching period, whereafter an average value of the samples is calculated.

2. Method according to claim 1, characterized in that the digitally filtering includes hastening and delaying the originally evenly-distributed sample positions to be in quiet PWM zones.

3. Method according to claim 1, characterized in that the digitally filtering includes sorting out samples known to be disturbed as well as sorting out non-disturbed samples.

4. Method according to one of the claims 2 - 3, characterized in that a second average is calculated within the actual switching period using samples from the last half of the preceeding switching period and samples from the first half of the actual switching period to obtain two current values per switching period.

5. Method according to one of the preceeding claims, characterized in that the current sensing device is a unipolar magnetic current sensor.

6. Method according to one of the preceeding claims, characterized in that the sampling frequency (f_s) is adjusted according to the result of an initialisation test on one or more current sensing devices (10) in a current free period.

7. Method according to one of the preceeding claims, characterized in that the output signal is transmitted differentially.

8. Motor controller using the method described in claim 1 and containing a power card and a control card, where a current sensing device is placed on the power card and generates an output signal to the control card, characterized in that the output signal (i_{w1}, i_{v1}) is transmitted to an amplifier (22) placed on the control card (19), the amplifier having a gain determined by components (R2,R5) mounted on the power card (18) and components (R3,R4,R6,R7) mounted on the control card.

9. Motor controller according to claim 8 characterized in that the amplifier is a differential amplifier and that the output signal (i_{w1}, i_{v1}) is differentially transmitted.

10. Motor controller according to claim 9, characterized in that the differential amplifier (22) is a single stage ampliflier having a fixed gain determined by the components on the control card, and that the fixed gain is changeable with the components mounted on the power card.

11. Motor controller according to claim 9, characterized in that an analog filtering degree of the differential amplifier (22) may be set on the power card independent of an internal bandwidth of the current sensing device (10).

12. Motor controller according to claim 8, characterized in that the current sensing device is a magnetic current transducer fed with a supply voltage (20).

13. Motor controller according to claim 12, characterized in that the supply voltage (20) of a unipolar magnetic current transducer is set to be at least two times larger than an internal voltage reference of the transducer.

14. Motor controller according to one of the claims 12 and 13, characterised in that the supply voltage (20) of a unipolar current transducer is restricted to be in the positive/upper tolerance band of the tolerance on the transducer supply voltage.

15. Motor controller according to claim 14, characterized in that the typical actual supply voltage (20) for the current transducer is centered within the upper supply voltage tolerance band of the unipolar current transducer.

16. Motor controller according to claim 12, characterized in that the magnetic current transducer on the power card gives the output signal a gain which enables the output signal to be used for overcurrent protection (26,27) of the motor controller.

17. Motor controller according to claim 8, characterized in that an A/D-converter (25) is programmed to oversample the output signal over the switching period, while hastening and delaying the originally evenly-distributed sample positions to be in quiet PWM zones.

18. Motor controller according to one of the above claims, characterized in that several current sensing devices (10) are placed on the power card (18).